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STUDIES ON BERMUDA FUNGI—I
PORONIA LEPORINA

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(WITH PLATE 5 AND 5 TEXT FIGURES)

Toward the close of our recent collecting expedition in the Bermuda Islands (January 11 to February 13, 1926) a fungus was collected which was of more than usual interest. This collection was made by the senior author on Grace Island, a small island in

FIG. 1. Shore line on Tucker Island near Grace Island, Bermuda, showing old residence and Bermuda cedars.

Hamilton Harbor, where a day was spent as the guests of Mr. Thomas Godet who very kindly placed himself and his motor boat at our service. Tucker Island, which has a single residence now deserted and partially in ruins so that the island is un-

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inhabited, was also visited by us on this occasion. The trip to these islands was made at Mr. Godet's suggestion and primarily for the purpose of studying the diseases of the "prickly pear" cactus.

While Mr. H. K. Lewcock of Australia, who accompanied us on this expedition, spent his time making observations on the diseases of the cacti, the mycological members of the party (Mr. L. Ogilvie and the senior writer) spent their time hunting for fungi. A number of interesting collections were made, among them, a species of *Tylostoma*, a stalked puffedball, a genus no species of which had previously been recorded for the Bermudas; a fine collection of *Geaster*, the species not yet determined; and *Lamprospora miniata*, a species previously found on the main island of Bermuda.

The fungus which has prompted the writing of the present paper is a species of *Poronia* (PLATE 5, FIG. 2) collected in quantity on the excrement of rabbits which appeared to be very abundant on this particular island. One species of *Poronia*, *Poronia Oedipus* (PLATE 5, FIG. 1) has been very commonly collected not only in Bermuda but in nearly all of the tropical islands visited by the writers. That species occurs on the excrement of cattle. No other species of *Poronia* has been found in Bermuda up to this time. The species on rabbit dung was new to the writers and naturally excited their interest.

Immediately on returning home, the records were checked over in order to find out what species of *Poronia*, if any, had been reported on this substratum. We found that Ellis and Everhart had collected such a species at Emma, Missouri, in 1889 and distributed it in North American Fungi, *2354* (see Proc. Acad. Nat. Sci. Phila. **1890**: 229).

In the herbarium of The New York Botanical Garden there is a drawing from the Massee collection apparently by George Massee labeled *Poronia leporina* Ellis and Everhart with the following note attached: "On rabbit dung, Cadeby, Yorks.—first record for Europe." There is no specimen accompanying this drawing. So far as we are aware, the original collection from Missouri and Massee's sketches of the specimen taken in England comprise our complete knowledge of the distribution of the species. Its

occurrence therefore in one of the small islands of the Bermudas is surprising.

One will naturally say that the species is widely distributed but has been overlooked by collectors. This does not seem to us to be a satisfactory explanation since the same collectors who found it in Bermuda would have been just as likely to find it in any of the other tropical islands or in the mainland for it is not too small to be easily seen. It is quite possible that it is not a true tropica

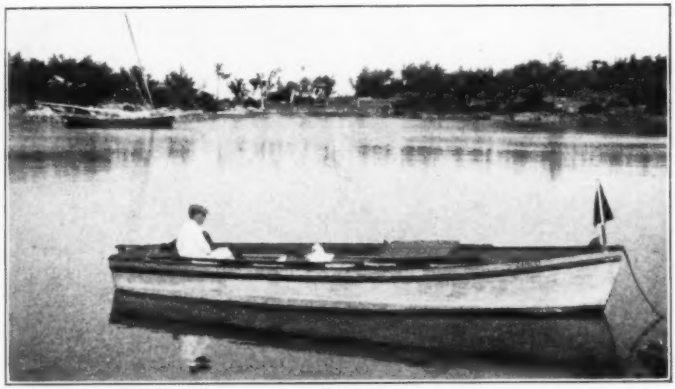

FIG. 2. Getting ready to leave Tucker Island at the close of the day.

species but is restricted to the warmer regions of the temperate zone. We will leave the readers to offer other explanations of this peculiar distribution.

The fungus occurs abundantly on Grace Island, as many as a half dozen or more stromata growing on a single pellicle of the dung. A large collection was made and a quart or more could easily have been secured if one had taken the time. After we had collected a goodly quantity of the material Mr. Godet informed us that rabbits were still more numerous on one of the neighboring islands. We went to this island and spent what time there was left searching for this and other objects of interest but to our surprise we found none of the *Poronia* on this island. Our failure to do so may have been partly due to lack of time but we feel certain that if the fungus were as abundant on the last island as on Grace Island we could not possibly have missed it, since a

special search was made for it. The species was tentatively determined by us and later submitted to Dr. C. L. Shear who reported that in his opinion it was identical with the Ellis and Everhart species.

The Bermuda material shows a relatively wide range in size of the stromata. They vary in height from one half mm. or less up

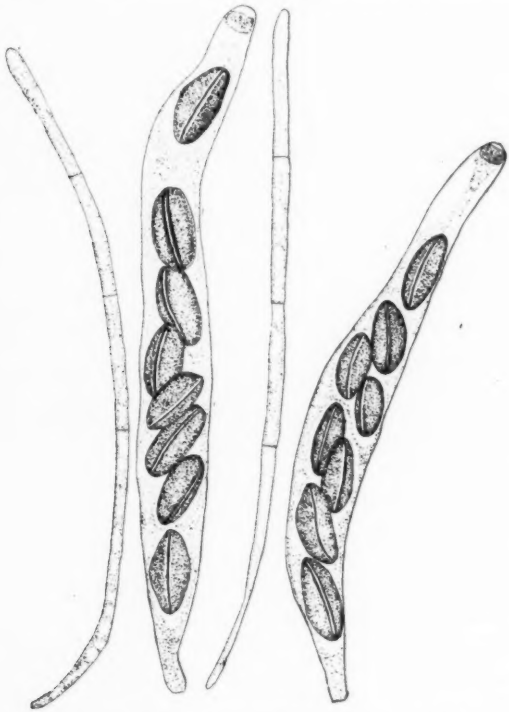

FIG. 3. Asci, ascospores and paraphyses. × 700.

to 3.5 mm., the majority being about 2 mm. The stipes are rather stout, averaging about .5 mm. in diameter. The stromatal caps are irregularly discoid, ranging from .5 to 3 mm. in diameter, most of them being from 1.5 to 2 mm. broad. The stromata are light tan in color, sometimes with a reddish tinge, the stipes usually of a somewhat lighter shade than the discs.

The disc is flecked with the prominent convex black ostiolate apices of the perithecia (PLATE 5, FIG. 2) which are large and protuberant, giving the stroma a papillate aspect. The number of perithecia per stroma varies from 3 in the smallest fruit bodies to 30 in the largest. The average-sized stromal disc usually carries about 15 to 20 perithecia.

The eight-spored asci are oblong, somewhat swollen at the middle and with a blue staining (in iodine) plug in the apical pore (TEXT FIG. 3). Measurement of 50 asci gave an average size of 145.3 × 15 μ with a mode of 137 × 13 μ. This is considerably larger than the measurements given in the original description (80–100 μ). Examination of type material (N. A. Fungi *2354*) shows the asci immature with the spores hyaline or only slightly colored. They, however, measure well over 100 μ. The paraphyses are hyaline, septate, slender, tapering slightly below.

The mature ascospores (PLATE 5, FIG. 4) are rather long elliptical, black with a lighter linear groove on one side (TEXT FIG. 5). They are surrounded by a hyaline gelatinous coat. Measurements of 100 ascospores averaged 20.2 × 9.16 μ with a mode of about 18 × 8.7 μ, which is again decidedly larger than that given by Ellis and Everhart (12–15 × 6–7 μ). The immature spores from the type material however measure about 15 to 16.2 × 6–8.4 μ. The structure of the stroma and perithecia is shown in the somewhat diagrammatic sketch (TEXT FIG. 4) of a longitudinal section through the disc and tip of the stalk.

CULTURE EXPERIMENTS

The dried rabbit dung bearing the *Poronia* was taken to Cornell University. Some weeks later, some of the dung balls were placed in a moist chamber for a day or so preparatory to photographing. It was observed that the black ascospores were ejected some centimeters and adhered to the lid of the moist chamber. This suggested the possibility of obtaining the fungus in pure culture.

The junior author undertook the culture work. Preliminary attempts to germinate the spores scraped from the lid of the moist chamber failed though trials were made in water, dung decoction and on potato agar. A few attempts were made to stimulate

germination by heating but these gave no growth. Later however pure cultures were obtained by transferring ascospores to potato agar slants but these cultures gave only a cottony white mycelium. Stromata never developed.

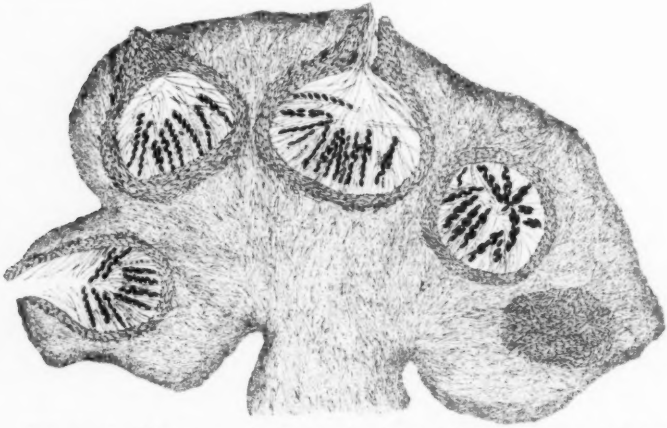

FIG. 4. Semidiagrammatic sketch of a longitudinal section through the stromal disc and tip of the stipe. × 80.

Meanwhile spores shot on to the lids of sterile petri dishes were transferred to sterilized rabbit dung on wet cotton in test tubes. These gave pure cultures and eventually the perfect stage with mature ascospores (PLATE 5, FIG. 3). At the same time ascospores discharged on lettuce leaves and slices of carrot were fed to a rabbit, the dung from which, collected 24 hours later, was placed in a moist chamber on wet sphagnum moss at laboratory temperature. The dung balls soon became covered with a dense white mycelial weft. Young stromata bearing conidia and immature perithecia developed within three weeks. These rapidly matured, producing ripe ascospores.

The first evidence of growth following inoculation of dung is a dense furry pinkish white growth of mycelial hyphae over the surface of the dung ball. The stromata appear in about two weeks and mature ascospores are ripe and being discharged in about five weeks in cultures held at the ordinary summer temperature of the laboratory (PLATE 5, FIG. 3). The stromata

grown in pure culture are in general of about the same form and size as those occurring in nature. They vary in size to about the same extent as those on the dung balls from Bermuda except that the stalks are relatively long.

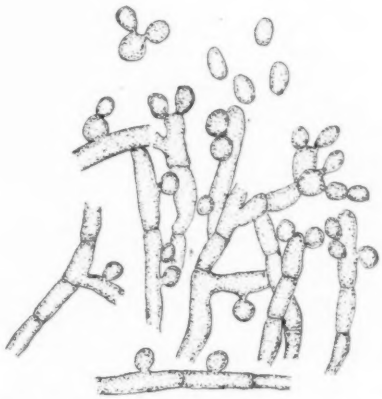

FIG. 5. Conidia developed in pure culture on the mycelial hyphae covering the young stromata. × 1000.

The stromata are at first blunt or pointed slender columns covered with a tender white mycelial weft bearing minute globose conidia borne somewhat like microconidia along the sides of the septate hyphae (TEXT FIG. 5). No attempts were made to germinate these conidia but they probably function in propagating the fungus.

Specimens of this fungus are deposited in the Plant Pathology herbarium at Cornell University, No. *15060* (Fungi of Bermuda No. *375*), duplicates of which are also to be found in the herbarium of the New York Botanical Gardens and in the mycological collections of the Bureau of Plant Industry, U. S. Department of Agriculture.

The photograph of the fungus was prepared for us by Mr. Fisher of Cornell University and the kodak views of the island by Mr. Thomas Godet. The drawings are by the junior author.

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EXPLANATION OF PLATE 5

Fig. 1. *Poronia Oedipus*, natural size.

Fig. 2. *Poronia leporina*, 2 × natural size. The two dung balls with stromata at the left are shown in top view, the one to the right shows the stromata in side view.

Fig. 3. *Poronia leporina* as it develops in pure culture on sterilized rabbit dung on moist cotton in test tubes. On the left, mature stromata, cotton and dung removed from test tube. On the right, immature stromata still in the test tube.

Fig. 4. Spores of *Poronia leporina*, × 310.

THE RUSTS OF SOUTH AMERICA BASED ON THE HOLWAY COLLECTIONS—II[1]

H. S. JACKSON

SPECIES ON SALICACEAE

50. MELAMPSORA HUMBOLDTIANA Speg. Anal. Mus. Nac. Buenos Aires **23**: 28. 1912.

Melampsora americana Arth. Bull. Torrey Club **47**: 465. 1920.

Melampsora americana Jorstad, Rep. Sci. Res. Nouv. Exped. Nov. Zemblya **18**: 11. 1923.

Salix Humboldtiana Willd. Arequipa, Peru, July 9, 1920, *767*.

The collection, which includes uredinia only, is on the type host for the species. This is the only *Melampsora* described from South America on *Salix* and has been reported previously only from Argentina. Arthur (N. Am. Fl. **7**: 668. 1924) has included with this the North American species *M. americana* Arth. The latter has been cultured in North America to *Abies* by Fraser (Mycologia **4**: 187. 1912). It is quite possible that the European *Melampsora Abieti-cuprearum* Tubeuf. 1902, (*Caeoma Abietis pectinatae* Rees. 1869) is the same. We are retaining the South American name for the purposes of this list, however, because no suitable material of the European form is available for study.

51. MELAMPSORA MEDUSAE Thüm. Bull. Torrey Club **6**: 216. 1878.

Uredo Medusae Arth. Résult. Sci. Congr. Bot. Vienne 338. 1906.

Populus sp. Cochabamba, Bolivia, Feb. 27, 1920, *341*; La Paz, Bolivia, Mch. 31, 1920, *488*.

These collections answer well to the above species. The urediniospores are relatively large, 28–35 μ in length, with smooth

[1] Contribution from the Botanical Department of the Purdue University Agricultural Experiment Station.

The first article of this series will be found in Mycologia **18**: 139–162. 1926.

spots. It seems best to assign the collections to the North American species for the present.

SPECIES ON BETULACEAE

52. MELAMPSORIDIUM ALNI (Thüm.) Dietel, in E. & P. Nat. Pfl. 1[1]: 551. 1900.

Melampsora Alni Thüm. Bull. Soc. Mosc. **53**: 226. 1878.

Alnus Mirbelii Spach. Cuenca, Prov. del Azuay, Ecuador, Sept. 15, 1920, *986*.

Only one other collection is known from South America, made by G. Lagerheim at Quito, Ecuador, in 1889. The species is recorded from California and Guatemala in North America and is also known in Japan and Eastern Asia.

SPECIES ON MORACEAE

53. CEROTELIUM FICI (Cast.) Arth. Bull. Torrey Club **44**: 509. 1917.

Uredo Fici Cast. Desmaz. Pl. Crypt. (Fasc. 34) *1662*. 1848.

Uredo Fici guarapiensis Speg. Anal. Soc. Ci. Argent. **17**: 120. 1884.

Uredo ficicola Speg. Anal. Soc. Ci. Argent. **17**: 120. 1884.

Physopella Fici Arth. Résult. Sci. Congr. Bot. Vienne 338. 1906.

Ficus angustifolia Miq. Guayaquil, Ecuador, July 31, 1920, *802*.

Ficus ibapohy Mart. São Joáo, São Paulo, Brazil, July 2, 1922, *1992*.

A common species in tropical regions throughout the world. It has been previously reported from South America from Trinidad, Argentina, Brazil and Ecuador.

54. UREDO CONSANGUINEA Syd. Osterr. bot. Zeitschr. **52**: 184. 1902.

Dorstenia multiformis Miq. Petropolis, Rio de Janeiro, Brazil, Nov. 2, 1921, *1267*.

This collection is made near the same locality and on the same host as the type collection. We have not seen the type but the description fits our material except that the paraphyses are not strongly developed. This species is evidently closely related to *Uredo rubescens* Arth. The latter has been reported from Trinidad on *Dorstenia Contrajerva* L.

SPECIES ON URTICACEAE

55. PUCCINIA URTICAE Barclay, Sci. Mem. Med. Off. India **2**: 38. 1887.

Urtica ballotaefolia Wedd. Quito, Ecuador, Aug. 13, 1920, *880*.

The type of this species has not been available for study but this collection answers the description very well and we think it best to assign it to this species for the present. It is evidently a micro-form. The teliospores in our specimen measure 14–18 by 40–55 μ, with apex thickened 3–7 μ.

SPECIES ON LORANTHACEAE

56. **Aecidium Phrygilanthi** Jackson & Holway, n. sp.

O. Pycnia not seen.

I. Aecia amphigenous, chiefly hypophyllous, in irregular groups, 0.5–0.8 cm. across, on discolored spots along veins, small, 0.5–0.8 mm. across; peridium firm, cylindric, erose at margin, yellowish; peridial cells irregularly rhomboid, considerably overlapping, 20–30 by 30–40 μ, outer wall smooth, 2.5–3.5 μ thick; inner wall finely verrucose, 2–3 μ thick; aeciospores globoid or ellipsoid, 24–28 by 25–35 μ, wall colorless, 1.5–2 μ thick, finely verrucose.

Phrygilanthus eugenioides (H.B.K.) Eichl. Sorata, Bolivia, April 17, 1920, *538* (type).

57. **Aecidium Struthanthi** Jackson & Holway, n. sp.

I. Aecia amphigenous, chiefly hypophyllous, in groups on more or less circular hypertrophied areas, 3–5 mm. across; peridium cylindrical, erose, golden-yellow, rather firm; peridial cells oblong or narrowly rhomboidal in side view, 14–18 by 22–38 μ, outer wall thick, 4–7 μ, strongly transversely striate; inner wall 1.5–2.5 μ, finely and closely verrucose-rugose; aeciospores irregularly

globoid or ellipsoid, 18–20 by 26–34 μ, wall slightly tinted golden-yellow, 2.5–3 μ thick, very finely and closely verrucose, appearing smooth.

Struthanthus marginatus (Desv.) Blume. Therezopolis, Rio de Janeiro, Brazil, Sept. 30, 1921, *1177*.

This species does not agree exactly with any described on Loranthaceae and it seems best to give it a distinctive name until it is possible to make a careful comparative study of all the species of *Aecidium* and *Uromyces* which have been described on this family. There are evidently a considerable number of species involved. The above species is quite different from the aecia of *Uromyces Urbanianus* which is reported from North America on the same host genus.

58. **Uromyces Loranthi** Jackson & Holway, n. sp.

II. Uredinia amphigenous, gregarious and somewhat confluent on definite, somewhat thickened spots, 1.5–3 mm. across, often arranged in a concentric manner, tardily naked, cinnamon brown, ruptured epidermis conspicuous and persistent; urediniospores ellipsoid or obovoid, 26–30 by 30–38 μ; wall 1.5–2 μ, light cinnamon brown, finely and moderately echinulate, pores 4, equatorial.

III. Telia not seen; teliospores in the central uredinium obovoid, 19–23 by 26–42 μ, wall 1.5–2 μ, thickened at apex, 6–8 μ, finely and closely verrucose, pedicel colorless, short.

Loranthus sp. Sabará, Minas Geraes, Brazil, Dec. 2, 1921, *1358*.

Three other species of *Uromyces* have been described on Loranthaceae having this type of life history;—*U. euphlebius* Sydow from Mexico, *U. Socius* from Guatemala, and *U. ornatipes* from Lower California. The species described above differs from all in the character of the markings of the teliospores which show no tendency to be arranged in lines.

While making this study the writer had occasion to examine the type of *Uromyces Phtirusae* Mayor on *Phtirusa purifolia* (H.B.K.) Eichler, and found that the supposed teliospores which were described are really the urediniospores and that the teliospores, which are present, were not described by Mayor. The urediniospores are strongly striately marked and in general correctly described (as teliospores) except that there are 4 distinct

equatorial pores. The teliospores are irregularly ellipsoid, 18–26 by 26–40 μ, wall light chestnut brown, evenly 2–2.5 μ thick, very closely and minutely verrucose with the markings occasionally arranged in lines. The pedicel is colorless and short.

SPECIES ON SANTALACEAE

59. UROMYCES QUINCHAMALII Neger, Anal. Univ. Chile **93**: 777. 1896.

Quinchamalium bracteosum Phil. Viña del Mar, Chile, Sept. 14, 1919, *22*.

Quinchamalium gracile Brongn. La Paz, Bolivia, March 26, 1920, *462*.

Quinchamalium majus Brongn. Termas de Chillan, Chile, Dec. 31, 1919, *258*.

Quinchamalium thesioides Phil. Papudo, Chile, Sept. 18, 1919, *41*.

A characteristic species, evidently a eu-form in which the aecia are systemic in the host plant. Urediniospores have been described, but are rare in our material. This species has previously been reported only on *Q. majus* from Chile, Patagonia and Argentina.

SPECIES OF POLYGONACEAE

60. PUCCINIA POLYGONI-AMPHIBII Pers. Syn. Fung. 227. 1801.

Uredo Polygoni Schum. Pl. Saell. **2**: 233. 1803.

Puccinia Polygoni Alb. & Schw. Consp. Fung. 127. 1805.

Dicaeoma Polygoni-amphibii Arth. Proc. Ind. Acad. Sci. **1898**: 184. 1899.

Polygonum punctatum Ell. Therezopolis, Rio de Janeiro, Brazil, Sept. 28, 1921, *1156*.

Polygonum sp. Cochabamba, Bolivia, Feb. 25, 1920, *318*; Cascadura, Rio de Janeiro, Brazil, Aug. 24, 1921, *1069*.

61. UROMYCES POLYGONI (Pers.) Fuckel, Jahr. Nass. Ver. Nat. **23–24**: 64. 1870.

Puccinia Polygoni Pers. Neues Mag. Bot. **1**: 119. 1794.

Nigredo Polygoni Arth. Résult. Sci. Congr. Bot. Vienne 334. 1906.

Polygonum aviculare L. Papudo, Chile, Sept. 17, 1919, *28*.

The collection consists of uredinia only, but appears to be the same as the common North American rust on this host.

62. UROMYCES CRASSIPES Diet. & Neg. Engler Bot. Jahrb. **27**: 2. 1899.

Rumex cuneifolius Campd. Arequipa, Peru, July 9, 1920, *766*.

Rumex conglomeratus Murr. Constitucion, Chile, Oct. 23, 1919, *136*; Linares, Chile, Dec. 23, 1919, *247*.

Rumex sp. Zapallar, Chile, Sept. 22, 1919, *59*; Valdivia, Chile, Nov. 14, 1920, *176*; Puerto Varas, Lago Llanquihue, Chile, Nov. 26, 1919, *185*.

This is evidently a common species in Chile and Peru, though not reported elsewhere. The collections consist of uredinia only, with the exception of No. *247*, which bears a few telia.

SPECIES ON AMARANTHACEAE

63. **Aecidium Alternantherae** Jackson & Holway, n. sp.

O. Pycnia epiphyllous, few in small goups, globoid or depressed globoid, 80–110 μ wide by 75–85 μ high, ostiolar filaments absent.

I. Aecia chiefly epiphyllous in small groups on slightly discolored spots, small, 0.2–0.4 mm. across; peridium membranous, thin, inconspicuous, colorless, erose at margin; peridial cells seen in face view irregularly polyhedral, 22–30 by 30–45 μ, wall thin, colorless, without evident markings; aeciospores globoid or ellipsoid, 23–28 by 28–40 μ, wall thick, 2–2.5 μ, very finely verrucose.

Alternanthera Moquinii (Webb) Dusén. Bello Horizonte, Minas Geraes, Brazil, Nov. 24, 1921, *1333*; Nov. 26, 1921, *1338* (type); Dec. 1, 1921, *1356*.

This is a very distinct species suggesting an *Endophyllum* in its characters. A few uredinia are present on specimens *1338* and *1356*. These are similar to those referred in the following pages

to *Puccinia Mogiphanis* (Juel) Arth. This aecidium, however, is quite different from that found on some of the other collections which are referred to that species and which is described on page 58.

64. **Aecidium pratae** Jackson & Holway, n. sp.

O. Pycnia not seen.

I. Aecia hypophyllous, gregarious, few, in small groups 1.5–4 mm. across, small, 0.2–0.5 mm. across; peridium short, cylindric, yellowish; peridial cells rectangular, convex on inner side, abutted, 16–20 by 26–32 μ in side view, outer wall 6–8 μ thick, transversely striate, very finely verrucose on surface; inner wall 2.5–3 μ, coarsely tuberculate verrucose; aeciospores angularly globoid or broadly ellipsoid, 16–20 by 18–23 μ, wall thin, 1 μ, very minutely verrucose, appearing smooth.

On undetermined Amaranthaceae, Prata, São Paulo, Brazil, Apr. 9, 1922, *1716* (type).

This *Aecidium* is quite different from the aecia accompanying the uredinia referred to *Puccinia Mogiphanis* and differs from *A. bonariense* Speg. in the size of the spores.

65. PUCCINIA MOGIPHANIS (Juel) Arth. Bot. Gaz. **45**: 469. 1918.

Uredo Mogiphanis Juel, Bih. Kongl. Svenska Vet. Akad. Handl. 23, III, **10**: 24. 1897.

Achyranthes sp. Quito, Ecuador, Aug. 18, 1920, I, II, *913*; Silvestre, Rio de Janeiro, Brazil, Dec. 25, 1921, *1423*.

Alternanthera mexicana (Schlecht.) Hieron. Cochabamba, Bolivia, March 14, 1920, I, *407*.

Alternanthera Moquinii (Webb) Dusén. Pocos da Caldos, São Paulo, Brazil, April 8, 1922, II, *1711*.

Alternanthera paniculata H.B.K. Huigra, Chimborazo, Ecuador, Aug. 3, 1920, II, *829*; Sorata, Bolivia, April 19, 1920, II, *553*.

Alternanthera puberula Dietr. Nictheroy, Rio de Janeiro, Brazil, Aug. 22, 1921, *1061*.

Alternanthera ramosissima (Mart.) Chod. São Paulo, Brazil, Jan. 22, 1922, II, *1487*; São Paulo, Brazil, Jan. 22, 1922, II, *1490*.

The specimens listed above, with the exception of Nos. *407* and *913*, bear uredinia only. The spores are slightly smaller than the type, but agree with other South American collections referred to this species. There appear to be 4–6 scattered pores while *Uredo maculans* Pat. & Gaill., which is apparently closely allied, appears to have only 3–4 pores distributed approximately at the equator.

The following specimens in the Arthur herbarium, previously reported as *Puccinia striolata* (Speg.) Arth. (*P. macropoda* Speg.), are not that species but agree with the Holway collections listed above: on *Alternanthera ramosissima* (Mart.) Chod. from Brazil, J. N. Rose, *20733*; *Alternanthera pubiflora* (Moq.) Kuntze from Ecuador, J. N. Rose, *22346*; *Achyranthes* sp. from Ecuador, A. Pachano, *111*.

This species has not been reported for North America. Collections with somewhat similar urediniospores have been referred to *Uredo maculans* Pat. & Gaill. It is not, however, entirely clear as to what this name refers. It is possible that there are several species included under these two names. The true situation can only be determined when more specimens with telia are available for comparative study.

Two of the collections bear aecia, Nos. *407* and *913*. The first is not accompanied by uredinia, but the other is associated with uredinia on the same leaves. The two aecia are the same. A description follows.

I. Aecia amphigenous, chiefly hypophyllous, in groups 0.5–0.8 cm. across, surrounding a group of pycnia; peridium short, cylindric, erose at margin, yellowish; peridial cells irregularly rhomboid, 16–26 by 26–32 μ in side view, convex on inner side, outer wall 6–8 μ thick, transversely striate, minutely rugose on surface, the markings arranged in an irregularly concentric manner; inner wall 2–3 μ thick, tuberculate verrucose; aeciospores globoid or broadly ellipsoid, 26–32 by 32–42 μ, wall thin, 1–1.5 μ, finely verrucose.

66. PUCCINIA STRIOLATA (Speg.) Arth. Mem. Torrey Club **17**: 142. 1918.

Uredo striolata Speg. Anal. Soc. Cient. Argent. **9**: 174. 1880.

Puccinia macropoda Speg. Anal. Soc. Cient. Argent. **10**: 8. 1880.

Dicaeoma striolatum Arth. N. Am. Fl. **7**: 387. 1920.

Iresine Celosia L. Cochabamba, Bolivia, March 4, 1920, II, III, *366*.

This specimen bears uredinia typical of the type of *Uredo striolata* Speg. A few teliospores are also present. It should be noted, however, that there is another species with striate urediniospores common in S. America, which is described in the following pages as *Uromyces clarus*.

67. **Uredo Alternantherae** Jackson & Holway, n. sp.

II. Uredinia hypophyllous and caulicolous, scattered, round or nearly so, 0.5–1.5 mm. across, tardily naked, dark cinnamon brown, ruptured epidermis conspicuous; urediniospores ellipsoid, 26–30 by 32–34 μ, wall 2.5–3 μ, cinnamon brown, moderately echinulate-verrucose, pores 4–6, scattered.

Alternanthera paniculata H.B.K. Cuenca, Ecuador, Sept. 10, 1920, *977* (type).

This species differs from *Puccinia Mogiphanis* and *Uredo maculata* in the relatively remote placing of the urediniospore markings.

68. UROMYCES BONARIENSIS Speg. Anal. Soc. Cient. Argent. **10**: 133. 1880.

Uredo argentina Speg. Anal. Soc. Cient. Argent. **9**: 172. 1880. (Not *Uromyces argentinus* Speg. 1880.)

Gomphrena perennis L. Huigra, Provincia Chimborazo, Ecuador, Aug. 4, 1920, *844*.

This species appears to be quite distinct. We have been able to compare our specimen with the type of *Uredo argentina* Speg. and find substantial agreement. The urediniospore wall is verrucose-echinulate with the markings very closely placed. There are 4–6 scattered pores. The spores somewhat resemble those of *P. Mogiphanis* and *Uredo maculata*, but are consistently smaller.

69. UROMYCES CELOSIAE Diet. & Holw. Bot. Gaz. **31**: 326. 1901.
Puccinia obesispora Arth. Bull. Torrey Club **47**: 473. 1920.
? *Uredo nitidula* Arth. Bull. Torrey Club **47**: 473. 1920.
Nigredo (?) *Celosiae* Arth. N. Am. Fl. **7**: 246. 1912.
Dicaeoma (?) *obesisporum* Arth. N. Am. Fl. **7**: 387. 1920.

Iresine sp. Therezopolis, Rio de Janeiro, Brazil, Oct. 6, 1921, *1197*.

Iresine erianthos Poir. Petropolis, Rio de Janeiro, Brazil, Nov. 3, 1921, *1275*.

Amaranthaceous vine. Cantareira, São Paulo, Brazil, May 30, 1922, *1915*.

The three specimens listed above are assigned to this *Uromyces* with some doubt. Only uredinia are present in our material and the three specimens show some variation in size, shape and wall thickness. All of these variations can, however, be duplicated in the type specimen. The characteristic feature of the urediniospores is the sparse prominent markings and the equatorial pores.

The type of *P. obsesispora* has been carefully studied and the only teliospores which could be found were scattered singly on the surface of the leaf. It seems quite certain that they are stray spores from another species, probably one of the *Euphorbia* rusts. The urediniospores agree with the *Uromyces*.

70. **Uromyces clarus** Jackson & Holway, n. sp.

II. Uredinia hypophyllous, scattered or gregarious in more or less concentric groups, 0.4–0.8 cm. across, round, or oval, tardily naked, light golden brown, ruptured epidermis conspicuous and persistent; urediniospores obovoid, 18–24 by 24–28 μ, wall 1.5–2 μ thick, prominently obliquely striate, the lines 2–3 μ apart, pores obscure.

III. Telia not seen, teliospores in the uredinium obovoid or ellipsoid, 20–24 by 26–32 μ; wall colorless, 1.5–2 μ thick, apex thickened, 4–7 μ; pedicel colorless, two to three times length of spore.

Iresine Celosia L. El Chaco, Sur Yungas, Bolivia, May 25, 1920, *649* (type); Cantareira, São Paulo, Brazil, May 30, 1922, *1914*.

This species is very characteristic but has been confused with *Puccinia striolata* (Speg.) Arth. In the latter the urediniospore markings are closer and not so prominent and the spore wall is darker colored. The teliospores somewhat resemble those of *Uromyces Iresines* Lag. but differ somewhat in shape and the thickening at the apex is broad, not merely a slight abrupt thickening over the germ pore as in that species.

71. UROMYCES IRESINES Lagerheim; Sydow, Monog. Ured. **2**: 277. 1910.
Pucciniola Iresines Arth. N. Am. Fl. **7**: 444. 1921.

Iresine Celosia L. Quito, Ecuador, Aug. 14, 1920, *891*.
Iresine sp. Quito, Ecuador, Aug. 21, 1920, *936*; Quito, Ecuador, Aug. 28, 1920, *949*.

A characteristic opsis form known in South America only from Ecuador and Colombia and in North America from Guatemala and St. Thomas.

SPECIES ON NYCTAGINACEAE

72. **Aecidium Muehlenbeckiae** Jackson & Holway, n. sp.

O. Pycnia amphigenous, depressed globoid, 60–80 μ high by 110–145 μ broad, ostiolar filaments prominent and extruded.

I. Aecia hypophyllous, gregarious and numerous, in groups 0.8–1.0 cm. across, on discolored somewhat thickened spots, small, round, 0.2–0.5 mm. across; peridium yellowish, erose at margin; peridial cells nearly rectangular in side view, 15–18 by 26–32 μ, outer wall smooth, 4–7 μ thick, transversely striate; inner wall 1.5–2 μ, very finely and closely verrucose, convex; aeciospores globoid or ellipsoid, 16–18 by 20–22 μ, wall thin, 1 μ or less, finely verrucose.

Muehlenbeckia chilensis Meissn. Temuco, Chile, December 5, 1919, *199*.

73. PUCCINIA COLIGNONIAE Speg. Anal. Mus. Nac. Buenos Aires **6**: 226. 1899.
Colignonia glomerata boliviana Hemsl. Sorata, Bolivia. Apr. 14, 1920, *523*.
Colignonia rufopilosa Kuntze. San Felipe, Sur Yungas, Bolivia, May 19 .1920. *612*.

A typical micro-form otherwise known only from the type locality in Argentina. We have not seen the type, but the description fits our material so well that there can be little doubt as to the correctness of the determination. The first collection listed is on a variety of the type host.

74. **Uredo Muehlenbeckiae** Jackson & Holway, n. sp.

II. Uredinia amphigenous, chiefly hypophyllous, scattered, round, 0.5–1.0 mm. across, somewhat tardily naked, cinnamon or chocolate brown, ruptured epidermis conspicuous; urediniospores regularly obovate, 20–24 by 26–32 μ, wall thin, 1 μ, light cinnamon brown, very minutely and moderately echinulate, the pores prominent, 4 super-equatorial.

Muehlenbeckia chilensis Meissn. La Paz, Bolivia, March 23, 1920, *446* (type).

Muehlenbeckia tamnifolia Meissn. Quito, Ecuador, Aug. 14, 1920, *888*.

A very distinct species characterized by the very fine echinulations, placed at moderate distance apart, and by the four slightly super-equatorial pores.

SPECIES ON CARYOPHYLLACEAE

75. PUCCINIA ARENARIAE (Schum.) Wint. in Rab. Krypt. Fl. 1[1]: 167. 1881.

Uredo Arenariae Schum. Enum. Pl. Saell. **2**: 232. 1803.

Micropuccinia Arenariae Arth. & Jackson; Arth. Bull. Torrey Club **48**: 40. 1921.

Cerastium arvense L. Concepción, Chile, Oct. 27, 1919, *141*.

Cerastium vulgatum L. Puerto Varas, Lago Llanquihue, Chile, Nov. 21, 1919, *182*.

Cerastium sp. Peulla, Lago Todas los Santos, Chile, Nov. 30, 1919, *195*.

A short cycled form found in all parts of the world in temperate or alpine regions. Known otherwise from South America only in Argentina.

76. **Puccinia arenariicola** (P. Henn.) n. comb.

Uredo arenariicola P. Henn. Hedwigia **35**: 253. 1896.
Puccinia modica Holway, Jour. Myc. **10**: 164. 1904.
Dicaeoma (?) *modicum* Arth. N. Am. Fl. **7**: 388. 1920.

Arenaria lanuginosa (Michx.) Rohrb. Campos de Jordão, Sao Pãulo, Brazil, Apr. 21, 1922, II, III, *1748*.

The type of this long cycled species was collected in Argentina on the same host (as *A. diffusa* Ell.). A comparison with *P. modica* Holw. shows that they are the same. The specimens show both uredinia and telia.

SPECIES ON RANUNCULACEAE

77. AECIDIUM CLEMATIDIS DC. Fl. Fr. **2**: 243. 1805.

Clematis dioica L. Quito, Ecuador, Aug. 13, 1920, *870*.

This *Aecidium* is listed here for completeness. It belongs with *Puccinia Clematidis* (DC.) Lag., having uredinia and telia on various grasses (see Arthur, J. C., the Grass Rusts of South America, Proc. Am. Phil. Soc. **44**: 160. 1925).

78. COLEOSPORIUM CLEMATIDIS Barclay, Jour. Asiat. Soc. Bengal 59, II: 89. 1890.

Clematis sp. Alto da Serra, São Paulo, Brazil, June 14, 1922, *1965*.

This is the first record of a *Coleosporium* on *Clematis* from the western hemisphere. We are assigning it to the above species for the present. The collection consists of uredinia only.

SPECIES ON BERBERIDACEAE

79. AECIDIUM ARIDUM Diet. & Neg., Engl. Bot. Jahrb. **17**: 13. 1899.

Berberis Darwinii Hook. f. Peulla, Lago Todas, Sur Santos, Chile, Nov. 30, 1919. *192*.

This collection while on an unrecorded host for the species has been compared with the type and agrees in all essential characters.

80. AECIDIUM LÉVEILLEANUM P. Magn. Ber. Deutsch. Bot. Ges. **10**: 323. 1892.

Uredo Berberidis Lév. Ann. Sci. Nat. III. **5**: 268. 1846.
? *Uredo Aecidiiformis* Speg. Bol. Acad. Nac. Ci. Córdoba **11**:183. 1888.

Berberis actinacantha Mart. Baños de Cauquenes, Chile, Jan. 18, 1920, *299a*.

Berberis Blaurina Bellb. Itatiaya, São Paulo, Brazil, May 18, 1922, *1867*.

Berberis buxifolia Lam. Peulla, Lago Todas, Los Santos, Chile, Nov. 29, 1919, *190a*; Recinto, Chile, Jan. 9, 1920, *281*; Terman de Chillan, Dec. 28, 1918, *253a*.

Berberis congestiflora Gay. Temuco, Chile, Nov. 5, 1919, *166a*; Dec. 5, 1919, *198a*.

Berberis polymorpha Phil. Termas de Chillan, Chile, Jan. 3, 1920, *269*.

We are following Dietel & Neger (Engl. Bot. Jahrb. **27**: 6–13. 1899) and Sydow (Monog. Ured. **4**: 247–248. 1923) in keeping this *Aecidium* as a separate species. It is worthy of note, however, that five of the eight collections here reported were associated with *Puccinia Mayeri-Alberti* P. Magn. Dietel and Neger, however, have found other species of *Aecidium* associated and there seems to be some doubt as to the connection of this *Aecidium* with *P. Mayeri-Alberti*. A collection of the *Puccinia* is in the Arthur herbarium associated with *A. tubiforme* Diet. & Neger. This was collected by R. Thaxter on *Berberis buxifolia* at Punte Arenas, Magellanes, Chile. The question can only be finally settled by infection experiments.

81. PUCCINIA MAYERI-ALBERTI P. Magn. Ber. Deutsch. Bot. Ges. **10**: 320. 1892.

Berberis actinacantha Mart. Baños de Cauquenes, Chile, Jan. 18, 1920, *299*.

Berberis Blaurina Bellb. Campos do Jordão, São Paulo, Brazil, Apr. 21, 1922, *1749*.

Berberis buxifolia Lam. Peulla, Lago Todas, Los Santos, Chile, Nov. 29, 1919, *190*; Termas de Chillan, Chile, Dec. 28, 1919, *253*.

Berberis chilensis Gill. Panamavida, Chile, Dec. 10, 1919, *215*.

Berberis congestiflora Gay. Temuco, Chile, Nov. 5, 1919, *166*; Dec. 5, 1919, *198*.

Berberis ruscifolia Lam. La Falada, Argentina, Aug. 17, 1922, *2033*.

We have included in this species the forms having narrow spores and slightly thickened apices. With six of the collections, aecia were present on all or part of the leaves. These have been segregated and are reported under the name *Aecidium Léveilleanum* P. Magn. It is possible that the two are genetically connected. There is some doubt however, and we prefer to keep the two forms separate for the purposes of this list.

82. **Puccinia Rameliana** Jackson & Holway, n. sp.

III. Telia hypophyllous, scattered, round, 0.2–0.4 mm., early naked, pulverulent, blackish, ruptured epidermis not evident; teliospores broadly ellipsoid, 22–26 by 28–38 μ, rounded above and below, scarcely constricted; wall chestnut brown 2.5–3.5 μ thick, apex not or slightly thickened above to 4–5 μ, prominently and rather coarsely tuberculate; pedicel firm, colorless, equalling the spore or shorter.

Berberis sp. Cuenca, Ecuador, Sept. 10, 1920, *981* (type).

While no urediniospores were seen, this species does not have the aspect of a micro-form. The name is in honor of H. Ramel, manager of the Casa Pieterson, who aided the collectors in various ways during their stay in Cuenca.

It is possible that this species may belong to *Uropyxis*. We have hesitated to assign it to that genus as we have been unable to detect any pores in the teliospore. It is, however, much like *P. Stolpiana* (P. Magn.) Diet. & Neg. (Engl. Jahrb. **27**: 13. 1899) which has been assigned to *Uropyxis*. Our collection differs in the character of the markings of the surface of the spore and in the presence of persistent pedicels.

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FUNGI OF SANTO DOMINGO—I

RAFAEL A. TORO

(WITH PLATE 6)

Our knowledge of the fungi of Santo Domingo is comparatively meager. Berkeley (**5**) appears to have been the first to make a study of the fungous flora of this Island. His work is based on a collection made by A. Sallé and eighteen of the sixty-seven species studied were described as new. Later Berkeley (**6**), in connection with his studies of Australian fungi, reëxamined his Santo Domingan species, *Peziza domingensis*, and made it the type of the new genus *Phillipsia*. With the exception of a few short papers by González Fragoso and Ciferri (**13**), (**14**), (**15**), (**16**), (**17**), Ciferri and González Fragoso (**9**), dealing with the fungi, and a note by the writer (**28**) on the myxomycetes of that Island, all references to Santo Domingan fungi are scattered within the literature of other regions.

The fungus *Aecidium Cordiae* P. Henn. was described from a specimen collected in Santo Domingo, by Ehrenberg, and published by Bresadola, Hennings and Magnus (**7**) in connection with their studies on Porto Rico fungi. Léveille (**18**) and Lloyd (**19**) refer to the fungi collected by Poiteau in Hispaniola. It is doubtful, however, whether these fungi belong to Santo Domingo proper since there is no record of Poiteau having ever collected outside of Haiti. Feé (**11**) describes a new species of *Sphaeria* from this Island, *S. divaricata*, which was renamed by Saccardo (**21**) *Xylaria divaricata* (Feé) Sacc. Saccardo (l.c.) also reexamined most of Berkeley's Santo Domingan species of *Hypoxylon* and changed them to *Xylaria*. Reference is also made by Saccardo (**22**) to a rust described by deCandolle from this Island. In his studies of the Uredinales, Arthur (**1**), (**2**), (**3**), (**4**) includes Santo Domingo in the geographical distribution of many of the species. Burt (**8**) refers to species of *Stereum* collected by Taylor and by Stevenson; Olive and Whetzel (**20**) extend the range of *Endophyllum Stachytarpetae* to this Island, while the writer (**29**)

reports the results of his studies in connection with *Chaetosphaeria Bromeliae* Frag. & Ciferri.

The present paper is based on a collection made by Kern and Toro during March, 1926. Over 400 specimens were collected in the regions around Macoris, San Cristóbal, Bonao, La Vega, Santiago, Puerto Plata, Santo Domingo and La Romana. The study of this material reveals facts of sufficient importance to warrant this publication. Most of the species reported in this paper were unknown to the Island while few are described as new. Species reported for the first time in this paper are marked with asterisk (*) while new combinations or species are shown in **bold faced** type. The rusts are not considered in this work since they will be the subject of a forthcoming paper by the senior collector.

I desire to express my thanks to Mr. Carlos E. Chardón, Commissioner of Agriculture and Labor of Porto Rico, who made possible the collecting and studying of this material; Dr. N. L. Britton of The New York Botanical Garden for valuable assistance rendered; to Mr. Percy Wilson of the same institution for identification of the hosts of the fungi studied; to Dr. F. J. Seaver, under whose direction the work was done, for valuable suggestions and criticism and for reading and correction of the proof. Finally an expression of appreciation is due to Mr. Rafael A. Espaillat, Secretary of Agriculture of Santo Domingo; Dr. R. Ciferri, Director of the Experiment Station, and Mr. Santiago Michelena, a resident of Santo Domingo, whose courtesy and help made our enterprise more successful.

PHYCOMYCETES

PERONOSPORALES

ALBUGINACEAE

*1. ALBUGO CANDIDA (Pers.) Kuntze, Rev. Gen. Pl. **2**: 658. 1891.

Aecidium candidum Pers. in Gmel. Syst. Nat. **2**: 1473. 1791.

On *Brassica Urbaniana* O. E. Schulze, Santiago, March 22, No. *258*.

*2. ALBUGO IPOMOEAE-PANDURANEAE (Schw.) Swingle, Jour. Myc. **7**: 112. 1892.

Aecidium Ipomoeae-panduraneae Schw. Schr. Nat. Ges. Leipzig **1**: 169. 1822.

On *Ipomoea cathartica* Poir., San Cristóbal, March 13, No. *171*.

*3. ALBUGO PLATENSIS (Speg.) Swingle, Jour. Myc. **7**: 113. 1892.

Cystopus platensis Speg. Rev. Argent. Hist. Nat. **1**: 32. 1891.

On *Boerhaavea erecta* L., Bajabonico, March 25, No. *140*.

PERONOSPORACEAE

*4. PSEUDOPERONOSPORA CUBENSIS (Berk. & Curt.) Rostow, Flora **92**: 422. 1903.

Peronospora cubensis Berk. & Curt. Jour. Linn. Soc. **10**: 363. 1868.

On *Pepo moschata* (Duch.) Britton, Bajabonico, March 25, No. *293*.

*5. PSEUDOPERONOSPORA PORTORICENSIS (Lamkey) Seaver & Chardón in Sci. Surv. Porto Rico **8**: 13. 1926.

Peronospora portoricensis Lamkey; Stevens, Mycologia **12**: 52. 1920.

On *Melia Azedarach* L., Puerto Plata, March 24, No. *286*.

*6. RHYSOTHECA HALSTEDII (Farl.) Wilson, Bull. Torrey Bot. Club **34**: 403. 1907.

Peronospora Halstedii Farl. Proc. Am. Acad. Sci. **18**: 72. 1883.

On *Bidens cynapiifolia* H.B.K., San Cristóbal, March 14, No. *191*; Puerto Plata, March 24, No. *283*.

No record showing that this fungus occurs in the West Indies has been seen by the writer. The host is also a new one for the fungus. Our specimen shows great variations especially with respect to the swellings of the branches. It is also unlike the other specimens on other hosts, in that the epispore is smooth instead of wrinkled.

ASCOMYCETES

PLECTASCALES

ASPERGILLACEAE

*7. CERATOCARPIA WRIGHTII (Berk. & Curt.) Toro; Seaver & Chardón in Sci. Surv. Porto Rico **8**: 17. 1916.

Perisporium Wrightii Berk. & Curt. Grevillea **4**: 157. 1875.

Perisporiopsis Wrightii Stevens, Trans. Illinois Acad. Sci. **10**: 170. 1917.

On *Opuntia* sp., Santiago, March 22, No. *261*.

HYSTERIALES

HYPODERMATACEAE

*8. LOPHODERMIUM PINASTRI (Schrad.) Chev. Flora Paris **1**: 430. 1826.

Hysterium Pinastri Schrad. Jour. Bot. **2**: 69. 1799.

On *Pinus occidentalis* Sw., Bonao, March 16, No. *230*.

HEMISPHAERIALES

MICROTHYRIACEAE

*9. ASTERINA DIPLOCARPA Cooke, Grevillea **10**: 129. 1882.

On *Sida carpinifolia* L. f., La Vega, March 17, No. *221*; San Cristobal, March 13, No. *166*.

*10. ASTERINA CHRYSOPHYLLI P. Henn. Hedwigia **48**: 12. 1908.

On *Chrysophyllum oliviforme* L., Consuelo, March 10, No. *142*; Santiago, March 22, No. *262*.

*11. ASTERINA CORIACELLA Speg. Bol. Acad. Nac. Ci. Córdoba **11**: 560. 1889.

On *Cestrum diurnum* L., La Vega, March 20, No. *199*.

*12. ASTERINA JURUANA (P. Henn.) Theiss. Abh. Zool.-Bot. Ges. Wien **7**: 84. 1913.

Seynesia juruana P. Henn. Hedwigia **43**: 376. 1904.

On *Casearia guianensis* Urban, Bonao, March 16, No. *237*.

*13. ASTERINA MEGALOSPORA Berk. & Curt. Jour. Linn. Soc. **10**: 373. 1868.

On *Passiflora rubra* L., San Cristóbal, March 14, No. *184*.

*14. ASTERINA MELASTOMATIS Lév. Ann. Sci. Nat. III **3**: 59. 1845.

On *Heterotrychum umbellatum* (Mill.) Urban, Bonao, March 16, No. *248*

The host is a new one for this species.

*15. ASTERINA SOLANICOLA Berk. & Curt. Jour. Linn. Soc. **10**: 374. 1868.

On *Turnera ulmifolia* L., Santo Domingo, March 27, No. *301*.

*16. CAUDELLA PSIDII Ryan, Mycologia **16**: 179. 1924.

On *Psidium Guajava* L., San Cristóbal, March 13, No. *168*; Bonao, March 16, No. *232*. (PLATE 6, FIG. 8 AND 11).

HEMISPHAERIACEAE

*17. MICROPELTIS ALBO-OSTIOLATA P. Henn. Hedwigia **47**: 268. 1908.

On *Casearia guianensis* Urban, Santiago, March 21, No. *259*.

Although our specimen has smaller perithecia and asci than those described by P. Hennings (l.c.) for this species, the spores and other characters agree well with the description.

18. **Myriangiella arcuata** sp. nov.

Thyriothecia mostly epiphyllous, roundish, brown, pseudoparenchymatous, 425–550 μ in diameter, easily breaking into unequal fragments, upper portion with a thick band of angular cells surrounding a thinner layer and thus simulating an ostiolum 80–100 μ in diameter; asci spherical, thick-walled, sessile, 40–55 μ in diameter, 8-spored; spores inordinate, slightly curved or straight, unequally 9–11-septate, not constricted, 45–54 $\times$ 8–9 μ, ends obtuse, hyaline; paraphyses wanting. (PLATE 6, FIG. 1 AND 2).

On *Casearia aculeata* Jacq., San Cristóbal, March 13, No. *176* (*Type*). *Scolecopeltis micropeltiformis* Toro is also associated with this species.

In their treatment of the Hemisphaeriaceae, Theissen and Sydow (**27**) recognize the genus *Phragmothyriella* v. Höhn. and

separate it from *Microthyriella* v. Höhn. because it has many-celled spores. They also treat *Myriangiella* Zimm. as a doubtful genus of the Saccardiaceae. The genus *Myriangiella* was established by Zimmermann (**33**) with the single species, *M. orbicularis* Zimm. Later v. Höhnel (**30**) found that *M. orbicularis* Zimm. had all the appearances of a *Micropeltis* or some related genus and renamed the species *Micropeltis orbicularis* (Zimm.) v. Höhn. Afterwards v. Höhnel (**31**) in his revision of the genus *Micropeltis* excluded *M. orbicularis* (Zimm.) v. Höhn. and put it in the new genus *Phragmothyriella*. According to v. Höhnel, the fungus described by Zimmermann is a new genus and species. There is no reason why he should choose another name since *Myriangiella* Zimm. is synonymous and antedates *Phragmothyriella* v. Höhnel. *Phragmothyriella Molleriana* (Sacc.) v. Höhn. will then become **Myriangiella Molleriana** (Sacc.) comb. nov.

*19. SCOLECOPELTIS MICROPELTIFORMIS Toro, Mycologia **17**: 137. 1925.

On *Casearia aculeata* Jacq., San Cristóbal, March 13, No. *176*. The host is a new one for this species.

PERISPORIALES

PERISPORIACEAE

*20. APPENDICULELLA COMPOSITARUM (Earle) Toro, Mycologia **17**: 144. 1925.

Meliola Compositarum Earle, Bull. N. Y. Bot. Gard. **3**: 306. 1905.

On *Osmia odorata* (L.) Sch. Bip., Bonao, March 16, No. *233*; Santo Domingo, March 27, No. *297*.

On *Mikania* sp., Bonao, March 16, No. *249*; La Vega, March 19, No. *217*.

*21. **Appendiculella tonkinensis** (Karst. & Roum.) comb. nov.

Meliola tonkinensis Karst. & Roum. Rev. Myc. **12**: 77. 1892.

Meliola reticulata Karst. & Roum. Rev. Myc. **12**: 78. 1892.

According to Gaillard (**12**), *M. reticulata* is identical with *M. tonkinensis*. The differences between both species lie in the fact

that the latter was described from undeveloped material. Our specimen agrees with the description given by Gaillard, except that the perithecial appendages in the Santo Domingan specimen are more prominent and numerous. This may be due, however, to a difference in maturity and more extensive studies of the species are needed before we can determine with certainty whether we are dealing with one or two species.

On *Cecropia peltata* L., Bonao, March 16, No. *241*.

*22. DIMERIELLA CORDIAE (P. Henn.) Theiss. Beih. Bot. Centr. **29**^{2}: 67. 1912.

Dimerosporium Cordiae P. Henn. Hedwigia **48**: 4. 1908.

On *Varronia angustifolia* West., Santiago, March 21, No. *279*.

On *Varronia globosa* Jacq., Santiago, March 21, No. *278*.

23. **Dimerina dominicana** sp. nov.

Fungus epiphyllous, forming irregular, scattered, black-brown spots, 2–7 mm. in diameter; mycelium light-brown, thickly interwoven, septate, 4–6 μ thick; perithecia superficial, globose, astomous, black, 117–135 μ in diameter; asci fasciculate, numerous, clavate-cylindrical, short-stipitate, 8-spored, 54–58 $\times$ 14–24 μ, thick-walled; spores inordinate, 1-septate, not constricted, 16–22 $\times$ 4.5–6 μ, hyaline; paraphyses longer than the asci, filiform, numerous. (PLATE 6, FIG. 3 AND 5.)

Differs from *Dimerina ovoidea* (Speg.) Theiss. in the shape and size of the perithecium and in having smaller spores.

On *Wallenia laurifolia* Sw., San Cristóbal, March 13, No. *178* (*Type*), No. *175*.

*24. DIMERINA EUTRICHA (Sacc. & Berl.) Theiss. Beih. Bot. Centr. **29**^{2}: 65. 1912.

Dimerosporium eutrichum Sacc. & Berl. Rev. Myc. **7**: 156. 1885.

On *Meliola* sp. on *Hyptis capitata* Poit., Bonao, March 16, No. *245*.

On *Hyptis lantanifolia* Poit., Santo Domingo, March 27, No. *299*.

*25. IRENE HYPTIDICOLA (Stevens) Toro, Mycologia **17**: 139. 1925.

Meliola hyptidicola Stevens, Illinois Biol. Monog. **2**: 484. 1917.

On *Hyptis verticillata* Jacq., Consuelo, March 10, No. *146*; La Vega, March 17, No. *219*.

On *Hyptis capitata* Jacq., Bonao, March 16, No. *238*.

*26. IRENE LONGIPODA (Gaill.) Toro, Mycologia **17**: 141. 1925.

Meliola longipoda Gaill. Bull. Soc. Myc. Fr. **8**: 178. 1892.

On *Citharexylon fruticosum* L., La Vega, March 19, No. *211*; Santiago, March 21, No. *281*.

*27. IRENE MELASTOMACEARUM (Speg.) Toro, Mycologia **17**: 141. 1925.

Meliola Melastomacearum Speg. Bol. Acad. Nac. Ci. Córdoba **11**: 494. 1889.

On *Clidemia hirta* (L.) D. Don, Bonao, March 16, No. *227*.

*28. IRENE OBESA (Speg.) Theiss. & Sydow, Ann. Myc. **15**: 461. 1917.

Meliola obesa Speg. Anal. Soc. Ci. Argent. **18**: 264. 1884.

On *Zanthoxylon fagara* L., Santiago, March 21, No. *280*.

*29. IRENE PLEBEJA (Speg.) Theiss. & Sydow, Ann. Myc. **15**: 461. 1917.

Meliola plebeja Speg. Bol. Acad. Nac. Ci. Córdoba **11**: 502. 1889.

On *Solanum rugosum* Dunal, Bonao, March 16, No. *236*.

*30. **Irene Solani** (Stevens) comb. nov.

Meliola Solani Stevens, Illinois Biol. Monog. **2**: 483. 1917.

Although Stevens (**25**) in his description says that setae are present a careful examination of his type (Porto Rico Fungi No. *5750*) shows that these setae are only mycelial threads spreading from the base of the perithecium and sometimes they bear capitate hyphopodia. A comparative study of this and the preceding species may show them to be the same. The dimensions of our specimen overlap those of these two species.

On *Solanum torvum* Sw., Bonao, March 16, No. *244*.

*31. MELIOLA AMBIGUA Pat. & Gaill. Bull. Soc. Myc. Fr. **4**: 104. 1888.

Meliola Paulliniae Stevens, Illinois Biol. Monog. **2**: 513. 1917.

Meliola Serjaniae Stevens, Illinois Biol. Monog. **2**: 512. 1917.

A comparison of the Porto Rican specimens collected by Stevens (No. *7268*, *425*, and *1149*) with our Santo Domingan specimen shows that the setal characters are very variable. In some cases the setae are mostly acute and straight while the same specimen, in another slide, may show curved, obtuse setae. This is specially true in the specimen from Santo Domingo where these differences are very evident in the same microscopic mount. Since the three species show identical characters and occur on members of the same family, they should be considered the same.

Meliola Thouiniae Earle differs from these only on the predominance of the opposite hyphopodia. However, the hyphopodia are both alternate and opposite in all cases, which may indicate the inclusion also of this species as a synonym.

On *Allophyllus cominia* (L.) Sw., San Cristóbal, March 14, No. *193*.

On *Lantana trifolia* L., Bajabonico, March 23, No. *264*; Santiago, March 22, No. *263*.

On *Serjania polyphylla* Radlk., Santiago, March 22, No. *267*.

On *Casearia guianensis* Urban, San Cristóbal, March 13, No. *169*.

32. **Meliola aristata** sp. nov.

Fungus epiphyllous, forming black, slightly raised, orbicular spots 1–3 mm. in diameter; mycelium branched, closely interwoven, septate, cells 36–40 × 8–10 μ, brown; capitate hyphopodia alternate, sometimes unilateral, 1 per cell, 25–33 μ long; head cell ovate, sometimes lobed, 18–22 μ in diameter; basal cell 7–11 μ long, 7–9 μ wide; mucronate hyphopodia few, opposite, bottle-shaped, lighter in color, about 22 μ long; mycelial setae abundant, black, tips acute and lighter in color, septate, mostly straight, 275–300 μ long, 12–14 μ wide; perithecia glabrous, astomous, 110–150 μ in diameter; asci evanescent, 2-spored; spores 4-septate, light brown, constricted at septum, tips obtuse, cells subequal, 50–54 × 20–22 μ. (PLATE 6, FIG. 7, 12, 13 AND 14).

This is the first species of *Meliola* reported on the Passifloraceae. Apparently our species differs from *M. eriophora* Speg. in having smaller perithecia and larger spores.

Beelian formula 3111–53.2.1.

On *Passiflora* sp., San Cristóbal, March 14, No. *181* (*Type*).

*33. MELIOLA BIDENTATA Cooke, Grevillea **11**: 37. 1882.

On *Tabebuia* sp., Santo Domingo, March 25, No. *289*.

*34. MELIOLA CLAVULATA Wint. Hedwigia **25**: 98. 1886.

On *Ipomoea batatas* Lam., Bonao, March 16, No. *242*.

On *Ipomoea cathartica* Poir., Bonao, March 16, No. *246*; San Cristóbal, March 14, No. *195*; La Vega, March 19, No. *212*.

*35. MELIOLA CRENATO-FURCATA Sydow, Ann. Myc. **14**: 77. 1916.

On *Stygmaphyllon lingulatum* (Poir.) Small, Santiago, March 22, No. *254*. (PLATE 6, FIG. 10.)

*36. MELIOLA DESMODII Karst. & Roum. Rev. Myc. **10**: 77. 1890.

On *Meibomia axilaris* (Sw.) Kuntze, Bonao, March 16, No. *247*.

On *Meibomia cana* (Gmel.) Blake, San Cristóbal, March 14, No. *196*; La Vega, March 19, No. *215*.

On *Bradburgia virginiana* Kuntze, Santiago, March 22, No. *200*.

*37. MELIOLA DIEFFENBACHIAE Stevens, Illinois Biol. Monog. **2**: 530. 1917.

On *Dieffenbachiae seguine* (Jacq.) Schott, Bonao, March 16, No. *234*.

*38. MELIOLA EVANIDA Gaill. Ec. Sup. Pharm. Paris **1**: 102. 1892.

On *Tetragastris balsamifera* (Sw.) Kuntze, Bonao, March 16, No. *229*.

The specimen is referred to this species with some hesitancy. Although the setae characters are identical with what Gaillard describes for his species, the perithecia and spores of our specimen differ from his. (PLATE 6, FIG. 4.)

39. MELIOLA FURCATA Lév. Ann. Sci. Nat. III. **5**: 266. 1846.
On *Coccothrinax argentea* (Lodd.) Sargent, Santiago, March 21, No. *276*.

*40. MELIOLA GUIDNARDII Gaill. Bull. Soc. Myc. Fr. **8**: 176. 1892.
On *Turpinia paniculata* Vent., Bonao, March 16, No. *243*.

*41. MELIOLA MANGIFERAE Earle, Bull. N. Y. Bot. Gard. **3**: 307. 1905.
On *Mangifera indica* L., San Cristóbal, March 13, No. *165*.

*42. MELIOLA MERILLII Sydow, Philippine Jour. Sci. **8**: 479. 1913.
On *Cissus sicyoides* L., La Vega, March 17, No. *220*.

*43. MELIOLA MICONIAE Stevens, Illinois Biol. Monog. **2**: 498. 1917.
On *Miconia laevigata* DC., La Vega, March 19, No. *208*.

*44. MELIOLA MOLLERIANA Wint. Hedwigia **25**: 98. 1886.
On *Sida urens* L., Haina, March 11, No. *151*; San Cristóbal, March 13, No. *157*; La Vega, March 19, No. *209*.

*45. MELIOLA PANICI Earle, Muhlenbergia **1**: 12. 1901.
On *Olyra latifolia* L., Santo Domingo, March 27, No. *303*.

*46. MELIOLA PIPERIS Earle, Muhlenbergia **1**: 12. 1901.
Meliola Gaillardiana Stevens, Illinois Biol. Monog. **2**: 529. 1917.

There are four species of *Meliola* with forked setae reported on *Piper*. Their differences are so slight that if a comparative study of the type materials is made, it may be found that they are all identical. If that is the case, then they should be placed under *M. Patouillardii* Gaill., the older described species. *M. Piperis* Earle (Heller *4359b*) shows both forked and toothed setae.

On *Piper aduncum* L., Bonao, March 16, No. *235*.

*47. MELIOLA POPOWIAE Doidge, Trans. Roy. Soc. South Africa **8**: 142. 1920.
On *Anona reticulata* L., San Cristóbal, March 13, No. *177*.

*48. MELIOLA PRAETERVISA Gaill. Ec. Sup. Pharm. Paris **1**: 78. 1892.

On *Coccolobis grandifolia* Jacq., Santo Domingo, March 25, No. *291*.

49. MELIOLA PSIDII Fries, Linnaea **5**: 549. 1830.

On *Psidium Guajava* L., San Cristóbal, March 13, No. *167*.

Reported under *M. amphitricha* Fries by González-Fragoso and Ciferri (**13**).

50. MELIOLA PSYCHOTRIAE Earle, Bull. N. Y. Bot. Gard. **3**: 308. 1905.

On *Randia Mitis* L., San Cristóbal, March 12, No. *155*.

On *Borreria laevis* Griseb., San Cristóbal, March 13, No. *159*; March 14, No. *197*; La Vega, March 19, No. *216*; Santo Domingo, March 27, No. *298*.

The fungus has been also reported from Santo Domingo on leaves of *Exostema caribaeum* (Jacq.) R. & Sch. by Stevens (**25**) (Taylor No. *483*).

*51. MELIOLA SAPINDACEARUM Speg. Rev. Arg. Hist. Nat. Buenos Aires **1**: 407. 1891.

Meliola crucifera Starb. Arkiv. for Bot. **57**: 7. 1905.

Meliola Hessii Stevens, Illinois Biol. Monog. **2**: 527. 1916.

According to Spegazzini (**24**) *M. crucifera* and *M. Hessii* are synonyms of *M. Sapindacearum*. The writer has compared our specimen with the figures shown by Stevens (**26**) and Starback (l.c.) and found that it agrees with both.

On *Melicocca bijuga* L., San Cristóbal, March 13, No. *161*.

*52. MELIOLA STUHLMANNIANA P. Henn. Engl. Bot. Jahrb. **34**: 45. 1904.

On *Byrsonima crassifolia* H.B.K., Santo Domingo, March 25, No. *292*.

53. MELIOLA TABERNAEMONTANAE Speg. Anal. Mus. Buenos Aires **23**: 45. 1912.

On *Rauwolfia tetraphylla* L., San Cristóbal, March 13, No. *162*.

On *Tabernaemontana citrifolia* Jacq., Santiago, March 21, No. *282*.

*54. MELIOLA TENUISSIMA Stevens, Illinois Biol. Monog. **2**: 492. 1916.

On *Gouania polygama* (Jacq.) Urban, San Cristóbal, March 13, No. *163;* Bajabonico, March 23, No. *287*.

*55. MELIOLA TORTUOSA Winter; Gaillard in Ec. Sup. Pharm. **1**: 67. 1892.

On *Piper peltatum* L., Bonao, March 16, No. *239*.

*56. MELIOLA TRIUMFETTAE Stevens, Illinois Biol. Monog. **2**: 499. 1916.

On *Triumfetta semitriloba* Jacq., San Cristóbal, March 13, No. *170*.

*57. MELIOLA WOODIANA Sacc. & Sydow, Hedwigia **38**: 132. 1899.

Our specimen has slightly larger perithecia and more angular capitate hyphopodia than those figured by Doidge (**10**). A more careful study of the fungus may reveal it to be a new species.

On *Guaiacum officinale* L., Santiago, March 22, No. *257*.

*58. PARODIELLA PERISPORIOIDES (Berk. & Curt.) Speg. Anal. Soc. Ci. Argent. **2**: 178. 1880.

Dothidea perisporioides Berk. & Curt. Grevillea **4**: 103. 1876.

On *Dolicholus reticulatus* Millsp., Santiago, March 22, No. *265*.

*59. PSEUDOPERISPORIUM ERIGERONICOLUM (Stevens) Toro, Sci. Surv. Porto Rico **8**: 41. 1926.

Dimeriella erigeronicola Stevens, Trans. Illinois Acad. Sci. **10**: 166. 1917.

On *Leptilon bonariense* (L.) Small, La Vega, March 19, No. *218*. The host is a new one for the species.

60. TOROA DIMEROSPORIOIDES (Speg.) Sydow, Toro in Jour. Dept. Agr. Porto Rico **10**: 19. 1926.

Asteridium dimerosporioides Speg. Anal. Soc. Ci. Argent. **26**: 19. 1888.

This fungus has been described as a new Santo Domingan species under *Chaetosphaeria Bromeliae* González-Fragoso and Ciferri (**14**).

On *Bromelia Pinguin* L., San Cristóbal, March 14, No. *194*; La Vega, March 19, No. *207*.

CAPNODIACEAE

61. **Chaetothyrium variabilis** sp. nov.

Fungus epiphyllous, widely spreading; mycelium light-brown, forming a weft of cylindrical, closely septate hyphae, 5–7 μ wide; perithecia few, globular, ostiolate, raised or closely appressed to the mycelium and then widely spreading, 90–130 μ in diameter, when globular and raised, bearing setae, when spreading, without setae, light-brown to dark in color; setae 1–7 in each perithecium, black throughout, 75–112 $\times$ 7–5 μ, straight, tips acute; asci clavate-ellipsoid, sessile, 40–45 μ long, 22–24 μ wide, 8-spored; spores inordinate, clavate, 4–5-septate, not constricted at septa, 16–18 $\times$ 5–6 μ, hyaline; paraphyses wanting. (PLATE 6, FIG. 6 AND 9.)

On *Wedelia reticulata* DC., Santiago, March 22, No. *260* (*Type*).

HYPOCREALES

NECTRIACEAE

*62. CALONECTRIA ERUBESCENS (Rob.) Sacc. Michelia **1**: 309. 1878.

Sphaeria erusbescens Rob.; Desm. Ann. Sci. Nat. III. **6**: 72. 1846.

The species name is used in the sense of Seaver (**23**). According to Weese (**32**), what Seaver calls *C. erubescens* is probably *C. tubaroensis* since *C. erubescens* does not occur on remains of *Meliola* and is very distinct from this.

On mycelium of *Meliola* on *Banisteria laurifolia* L., San Cristóbal, March 14, No. *186*.

DOTHIDEALES

PHYLLACHORACEAE

*63. CATACAUMELLA GOUANIAE Stevens, Bot. Gaz. **69**: 252. 1920.

On *Gouania polygama* (Jacq.) Urban, San Cristóbal, March 13, No. *164*; Bajabonico, March 23, No. *158*.

*64. PHYLLACHORA CANAFISTULAE Stevens & Dalbey, Bot. Gaz. **68**: 54. 1919.

On *Cassia grandis* L. f., Santo Domingo, March 25, No. *290*.

*65. PHYLLACHORA ERIOCHLOAE Speg. Anal. Mus. Nac. Buenos Aires **19**: 416. 1909.

On *Valota insularis* (L.) Chase, Santiago, March 21, No. *275*; Haina, March 30, No. *307*.

On *Paspalum conjugatum* Berg., San Cristóbal, March 12, No. *156*.

*66. PHYLLACHORA GALACTIAE Earle; Seaver in Britton, Bahama Flora 633. 1920.

On *Galactia striata* (Jacq.) Urban, La Vega, March 19, No. *213*; Santiago, March 21, No. *277*.

*67. PHYLLACHORA PERFORANS (Rehm) Sacc. & Sydow in Sacc. Syll. Fung. **16**: 619. 1902.

Phyllachora dalbergiicola var. *perforans* Rehm, Hedw. **39**: 232. 1900.

On *Elsota virgata* (Sw.) Kuntze, San Cristóbal, March 14, No. *189*; Bonao, March 16, No. *240*; La Vega, March 19, No. *210*; Puerto Plata, March 24, No. *287*.

*68. PHYLLACHORA SERJANICOLA Chardon, Mycologia **13**: 293. 1921.

On *Serjania polyphylla* (L.) Radlk., Consuelo, March 10, No. *143*.

*69. PHYLLACHORA SPHAEROSPERMA Wint. Hedwigia **23**: 170. 1884.

On *Cenchrus viridis* Spreng., Haina, March 30, No. *309*.

*70. TRABUTIA GUAZUMAE Chardon, Mycologia **13**: 291. 1921.

On *Guazuma Guazuma* (L.) Cockerell, La Vega, March 17, No. *222*.

SPHAERIALES

SPHAERIACEAE

*71. ROSELLINIA SUBICULATA (Schw.) Sacc. Syll. Fung. **1**: 255. 1882.

Sphaeria subiculata Schw. Schr. Nat. Ges. Leipzig **1**: 44. 1882.

On dead wood, San Cristóbal, March 12, No. *321*.

PLEOSPORACEAE

*72. LEPTOSPHAERIA SACCHARI van Breda de Haan, Meded. Proefst. Suik. West-Java **1892**: 25.

On *Saccharum officinarum* L., Bajabonico, March 23, No. *250*.

*73. METASPHAERIA ABORTIVA Stevens, Trans. Illinois Acad. Sci. **10**: 186. 1917.

On *Varronia corymbosa* Desv., Santo Domingo, March 27, No. *300*.

This host is new for the fungus.

*74. PHYSALOSPORA ANDIRAE Stevens, Trans. Illinois Acad. Sci. **10**: 184. 1917.

On *Andira inermis* H.B.K., Las Matas, March 27, No. *306*. This species was also collected by J. A. Stevenson in Samaná, Aug. 2, 1918 (No. *7013*).

CUCURBITARIACEAE

*75. NITSCHKIA CUPULARIS Karst. Myc. Fenn. **2**: 81. 1873.

On *Sida glabra* Mill. (stems), Santiago, March 21, No. *255*.

The specimen is very poor and therefore it is referred to this species with some hesitancy.

VALSACEAE

*76. VALSA CHLORINA Pat. Bull. Soc. Myc. Fr. **22**: 56. 1906.

On husks of *Cocos nucifera* L., San Cristóbal, March 13, No. *310*.

XYLARIACEAE

*77. DALDINIA CONCENTRICA (Bolt.) Ces. & De-Not. Comm. Critt. Ital. **1**: 198. 1863.

Sphaeria concentrica Bolt. Fungi Halifax **3**: 180. 1789.

Collected by Taylor at Macoris, Nov. 15, 1909, No. *171*.

*78. KRETZSCHMARIA RUGOSA Earle, Bull. N. Y. Bot. Gard. **3**: 311. 1905.

On dead wood, San Cristóbal, March 13, No. *314*.

*79. NUMMULARIA BULLIARDII Tul. Fung. Carp. **2**: 43. 1863.

On dead wood, San Cristóbal, March 14, No. *318*.

*80. XYLARIA APICULATA Cooke, Grevillea **8**: 66. 1879.

On dead wood, San Cristóbal, March 10, No. *320*.

*81. XYLARIA ARBUSCULA Sacc. Michelia **1**: 249. 1878.

On dead wood, San Cristóbal, March 13, No. *316*.

*82. XYLARIA CONSOCIATA Starb. Bih. Sv. Vet.-Akad. Handl. **27**(3)[9]: 17. 1901.

On dead wood, San Cristóbal, March 13, No. *315*.

FUNGI IMPERFECTI

SPHAEROPSIDALES

83. ASCHERSONIA TURBINATA Berk. Ann. Mag. Nat. Hist. II. **9**: 199. 1852.

On scale insects on *Jambos Jambos* (L.) Millsp., Santo Domingo, March 27, No. *305*.

The type specimen of this species was collected in Santo Domingo by A. Salle (No. *75*).

*84. CONIOTHYRIUM CONCENTRICUM (Desm.) Sacc. Michelia **1**: 204. 1884.

Phoma concentrica Desm. Ann. Sci. Nat. II. **13**: 189. 1840.

On *Yucca aloefolia* L., Santiago, March 20, No. *202*.

HYPHOMYCETALES

*85. CERCOSPORA ATRICINCTA Heald & Wolf, Mycologia **3**: 14. 1911.

On *Crassina elegans* (Jacq.) Kuntze, Bajabonico, March 25, No. *295*.

*86. CERCOSPORA CASEARIAE Stevens, Trans. Illinois Acad. Sci. **10**: 212. 1917.

On *Casearia guianensis* Urban, Santiago, March 21, No. *274*.

*87. CERCOSPORA CHAMAECRISTAE Ellis & Kellerm.; Ellis & Ev. Jour. Myc. **8**: 7. 1888.

On *Herpetica alata* Raf., San Cristóbal, March 14, No. *190*.

88. CERCOSPORA COFFEICOLA Berk. & Curt.; Ellis & Ev. Jour. Myc. **4**: 5. 1888.

On *Coffea arabica* L., San Cristóbal, March 14, No. *192*.

*89. CERCOSPORA CONSPICUA Earle, Bull. N. Y. Bot. Gard. **3**: 312. 1905.

On *Cleome ginandra* L., Puerto Plata, March 24, No. *284*. Known also in Porto Rico (its type locality) on *Cleome spinosa* Jacq.

*90. CERCOSPORA HENNINGSII Allesch.; P. Henn. in Engl. Ostafr. Pflanz. **3**: 35. 1895.

On *Manihot Manihot* (L.) Cockerell, La Vega, March 20, No. *201*.

*91. CERCOSPORA MALACHRAE Heald & Wolf, Mycologia **3**: 19. 1911.

On *Malachra capitata* L., Bajabonico, March 25, No. *296*.

*92. CERCOSPORA PORTORICENSIS Earle, Muhlenbergia **1**: 15. 1901.

On *Piper aduncum* L., La Vega, March 19, No. *205*.

*93. CERCOSPORA RICINELLA Sacc. & Berl. Atti Inst. Ven. VI. **3**: 11. 1885.

On *Ricinus Communis* L., Consuelo, March 10, No. *144*.

*94. CLADOSPORIUM CALOTROPIDIS Stevens, Trans. Illinois Acad. Sci. **10**: 207. 1917.

On *Calotropis procera* (Ait.) R. Br., Santo Domingo, March 9, No. *141*.

*95. CLADOSPORIUM FULVUM Cooke, Grevillea **12**: 32. 1883.

On *Solanum torvum* Sw., Haina, March 11, No. *153*.

*96. OIDIUM sp.

On *Phaseolus lathyroides* L., San Cristóbal, March 12, No. *154*.

On *Sida carpinifolia* Bello, La Vega, March 17, No. *226*.

*97. PACHYTRICHUM GUAZUMAE Sydow, Ann. Myc. **23**: 420. 1925.

On *Guazuma Guazuma* Cockerell, Santiago, March 20, No. *322*.

DEPARTMENT OF PLANT PATHOLOGY,
INSULAR EXPERIMENT STATION,
RÍO PIEDRAS, PORTO RICO

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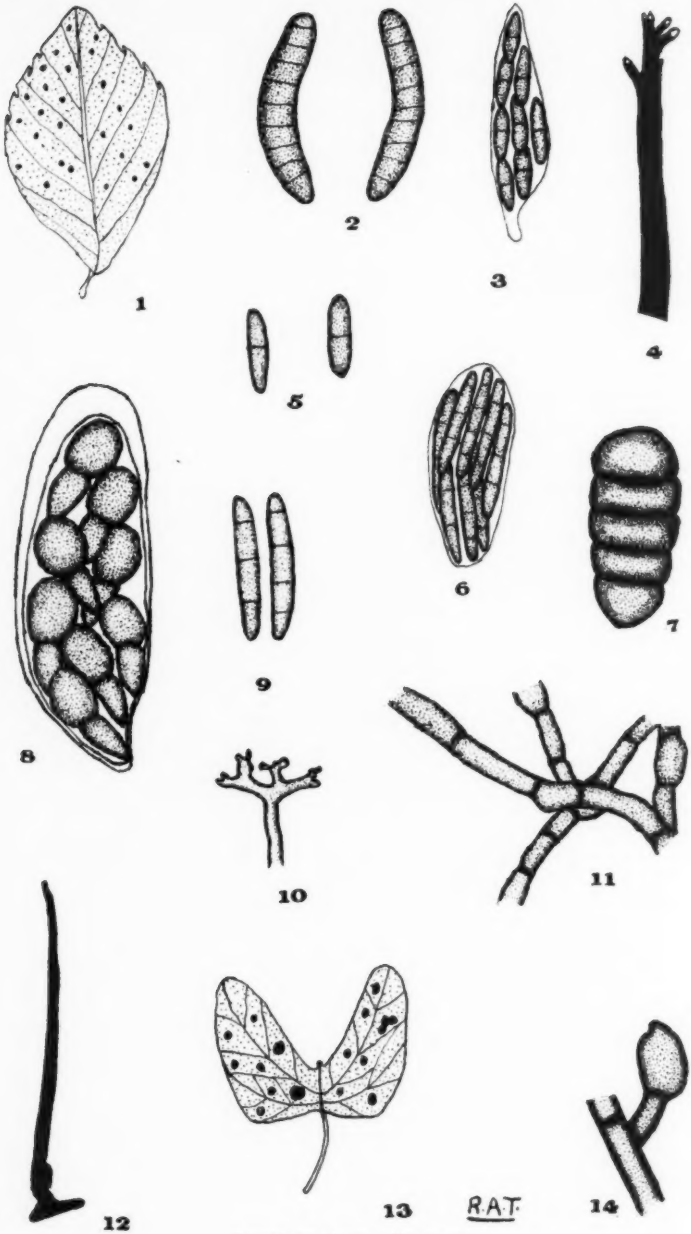

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EXPLANATION OF PLATE 6

Fig. 1. Diagrammatic sketch of a leaf of *Casearia aculeata* showing the distribution of the thiriothecia of *Miriangiella arcuata*. × 1.

Fig. 2. Two spores of *Miriangiella arcuata*. × 550.

Fig. 3. Ascus with 8 spores of *Dimerina dominicana*. × 550.

Fig. 4. Tip of a seta of *Meliola evanida*. × 550.

Fig. 5. Two spores of *Dimerina dominicana*. × 550.

Fig. 6. Ascus with 8 spores of *Chaetothyrium variabilis*. × 550.

Fig. 7. A spore of *Meliola aristata*. × 550.

Fig. 8. Ascus with 8 spores of *Caudella Psidii*. × 550.

Fig. 9. Two spores of *Chaetothyrium variabilis*. × 550.

Fig. 10. Tip of seta of *Meliola crenato-furcata*. × 160.

Fig. 11. Mycelium of *Caudella Psidii*. × 550.

Fig. 12. Seta of *Meliola aristata*. × 160.

Fig. 13. A leaf of *Passiflora* sp. showing distribution of the colonies of *Meliola aristata*. × 1.

Fig. 14. A mycelial branch with capitate hyphopodia of *Meliola aristata*. × 550.

A TENTATIVE SCHEME FOR THE TREATMENT OF THE GENERA OF THE PEZIZACEAE

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For many years past the writer has been engaged in the preparation of a monograph of the operculate cup-fungi of North America and, in fact, the work is so far advanced that it can be published (with illustrations) at any time when the funds seem to be available. Much time has been spent in trying to stabilize the genera on the basis of priority in accordance with the rules of the American code of nomenclature. In view of the fact that an attempt is being made by some mycologists, and others who can scarcely be classified as such, to disregard rules of priority in favor of "common usage," apparently in the hope of appealing to popular sentiment, it seems best at this time to publish a tentative scheme for the genera of the Pezizaceae, as they are being treated by the writer in his forthcoming monograph.

As the most of these genera are in common use, there will probably be no difference of opinion as to their present application. A few changes, however, which appear to be necessary in order to conform to the rule of priority, might at first thought seem radical to one who has made only a casual study of this group. A note will therefore be appended stating the reasons for the use of names where they involve any considerable number of changes in combinations. The reader will then be left to judge for himself as to the merits of the work, and if he will take the trouble to go into the case as thoroughly as the writer has done he will probably arrive at about the same conclusions.

We realize that a perfect classification cannot be worked out with our present incomplete knowledge of the life histories of individual species. No attempt has therefore been made to revolutionize the classification of this group. We are following Boudier's suggestion to divide the Discomycetes into two sections, the operculate and the inoperculate. The Pezizaceae belong to

the former and the family is then divided into a number of tribes based on some of the most conspicuous characters. Classification, however, is here used merely as a means to an end, the end being to present the genera and species of this group in such a manner that they may be readily recognized by the average student of fungi.

PEZIZACEAE

GENERA	TYPE SPECIES
Tribe. SPHAEROSPOREAE	
1. Sphaerospora	*Peziza trechispora* Berk. & Br.
2. Pseudoplectania	*Peziza nigrella* Pers.
3. Sphaerosoma	*Sphaerosoma fuscescens* Klotzsch.
4. Boudiera	*Boudiera areolata* Cooke & Phill.
5. Lamprospora	*Ascobolus miniatus* Crouan.
6. Pithya	*Peziza pitya* Alb. & Schw.
7. Ascodesmis	*Ascodesmis nigricans* Van Tiegh.
8. Cubonia	*Lasiobolus brachyascus* March.
Tribe. ASCOBOLEAE	
9. Ascobolus	*Peziza stercoraria* Bull.
10. Saccobolus	*Ascobolus Kerverni* Crouan.
Tribe. ALEURIEAE	
11. Aleuria	*Peziza aurantia* Pers.
12. Aleurina	*Peziza retiderma* Cooke.
13. Melastiza	*Peziza miniata* Fuckel.
Tribe. HUMARIEAE	
14. Psilopezia	*Psilopezia nummularia* Berk.
15. Pyronema	*Pyronema Marianum ?* (*Peziza omphalodes* Bull.)
16. Ascophanus	*Peziza subfusca* Crouan.
17. **Humarina** (in place of Humaria)	*Octospora leucoloma* Hedw.
18. Pseudombrophila	*Pseudombrophila Pedrottii* Bres.
19. Streptotheca	*Streptotheca Boudieri* Renney.
20. Ryparobius	*Ryparobius brunneus* Boud.
21. Thecotheus	*Ascobolus Pelletieri* Crouan.
Tribe. LACHNEEAE	
22. Sepultaria	*Peziza Sepulta* Fries.
23. [1] **Pseudopithyella** gen. nov.	*Sarcoscypha minuscula* Boud. & Torrend.
24. Perrotia	*Peziza flammea* Alb. & Schw.
25. Lasiobolus	*Peziza papillata* Pers.
26. Patella (in place of Lachnea)	*Peziza ciliata* Schaeff.

[1] Characters of the species.

Tribe. OTIDEEAE

27. Wynnea.....*Wynnea gigantea* Berk. & Curt.
28. Phillipsia.....*Peziza domingensis* Berk.
29. Scodellina (in place of Otidea)....*Peziza leporina* Batsch.

Tribe. SARCOSCYPHEAE

30. Cookeina.....*Peziza Tricholoma* Mont.
31. Plectania (in place of Sarcoscypha) *Peziza coccinea* Scop.
32. Bulgaria.....*Burcardia globosa* Schmidel.
33. Urnula.....*Peziza Craterium* Schw.
34. Paxina (in place of Acetabula and Macropodia).....*Peziza Acetabulum* L.

Tribe. PEZIZEAE

35. Geopyxis.....*Peziza carbonaria* Alb. & Schw. ?
36. Rhizina.....*Rhizina undulata* Fries.
37. Discina.....*Discina perlata* Fries.
38. Peziza.....*Peziza cochleata* L. (*Peziza badia* ?)
39. Sarcosphaera.....*Peziza macrocalyx* Reiss.

All of the genera suggested above with the exception of five (*Patella*, *Humarina*, *Scodellina*, *Plectania* and *Paxina*) have not only priority in their favor but usage as well, so that these will need no further discussion.

Probably the most radical change proposed is the substitution of *Patella* for the genus *Lachnea* of Saccardo, since the latter name is in use as a valid genus of flowering plants. Even the most ardent advocate of usage would probably not recommend that two plant genera be designated by the same name. Kuntze in 1891 suggested for this genus the name *Scutellinia* and made a number of new combinations but so far as I know this suggestion has never been followed by any student of Discomycetes. Since *Scutellinia* has never come into general usage we recommend the adoption of *Patella*, proposed by Weber in 1780, and recognized by Morgan in 1902.

The new name *Humarina* is also now proposed for the genus *Humaria* of Saccardo, since the latter name is a straight synonym of the genus *Patella*, and since there appears to be no prior name which may be substituted for Saccardo's genus *Humaria*.

The genus *Scodellina* was founded by S. F. Gray in 1821 and based on *Peziza leporina* Batsch. In 1869 Fuckel proposed the genus *Otidea* founded on the same species. On the basis of priority we accept the former name. This is a small genus, however,

and the change will not cause any great confusion. Only two new combinations will be necessary in our scheme.

Also *Plectania* of Fuckel antedates *Sarcoscypha* of Saccardo by twenty years and its adoption is proposed. To carry out this suggestion three new combinations will be necessary.

The name *Acetabula* is rejected by us since the same name is in use for a genus of algae. Kuntze proposed the substitution of *Paxina* in 1891 for this genus and Clements in 1903 proposed *Phleboscyphus*. In the present work we accept *Paxina*.

As this is a tentative scheme the writer would welcome suggestions based on actual investigations. Mere objections, however, by those who have not taken the trouble to look into the matter of nomenclature or who have not made a critical study of the Discomycetes in particular can be of little use.

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NOTES AND BRIEF ARTICLES

A Correction

In the September–October issue of Mycologia, 1926, volume 18, No. 5, page 232, was published a description of a new species of *Sclerotinia*. The ending of the species name "ae" is an error. It should read *Sclerotinia Erythronii*. H. H. Whetzel.

Spongipellis fissilis

On December 7, I was taken by several of the Florida Experiment Station men to Magnesia Springs, fourteen miles east of Gainesville, on a collecting trip; and there, in the moist woods, we found a very handsome specimen of *Spongipellis fissilis*. It grew in the angle between two buttresses of a large living laurel oak and the cluster of overlapping pilei measured about six inches broad and high.

Every part of the hymenophore was pure milk-white; a cross section of the context showed the zones very faintly; and the tubes were large and angular, with no appearance of resin and no unpleasant odor. The following day, I noticed that finger prints on the hymenium of specimens brought in had begun to turn dark, and in four days the entire mass of tubes had become very dark and resinous in appearance, while the zones in the context stood out very plainly, and a disagreeable odor pervaded the room.

A week later, we were collecting at Newnan's Lake, near Gainesville, and found a specimen of this same species growing twenty feet up on the trunk of a large living sweet gum. There was only one pileus in this case, but it was a foot in diameter and two inches thick. Mr. West put several bullet holes through it from his rifle without dislodging even a fragment for closer inspection, but when pushed off with a long pole it came down in several pieces.

This hymenophore had probably developed two or three weeks previously; the surface had become discolored and the tubes

were dark and odorous. It might be interesting to investigate the steps in this oxidation process and determine not only the cause of the dark color, but also of the resinous appearance and odor of decaying protein. In some polypores, the tubes attract insects with sugar when the spores are mature. Is it possible that *Spongipellis fissilis* is in the habit of courting green flies? W. A. MURRILL.

MYCOPHAGIC NOTES

The Edibility of Leotia

Leotia is a fungus I never tried to eat before because I never found enough of it to make a meal. On December 16, however, east of Gainesville, Fla., three of us found more than we cared to pick, the hymenophores coming up on a grassy knoll near some pine trees in such large numbers that we could stand in one spot and gather a small paper-bagful. Because of the sand, the yellowish-brown stems often went quite deep into the ground, and not infrequently the dark-green caps rested on the soil.

In preparing this fungus, I washed it well to free it from sand particles; placed the entire hymenophore, stem and all, into a pan with a little salt and very little water; and boiled it under a tight cover for nearly fifteen minutes. It was a satisfaction to watch it cook, because instead of shrinking to one tenth its size, more or less, it actually became larger, owing to its gelatinous nature. One has to guess at the time to take it off, as it does not soften like most mushrooms.

How does it taste? That is a difficult question. It feels somewhat like pickled pig's feet between the teeth and has to be chewed for some time before it is broken up; and it is so slippery that one of the sporophores will often escape down the throat without any chewing whatever. There is also a slight acid taste and no particular flavor to offset it. On the whole, I should not recommend it unless the situation were urgent; but I am glad I had the experience. I ate it in quantity at three consecutive meals without the least unpleasantness, then returned to *Armillaria mellea*, which tasted unusually good by comparison. To make a dish of *Leotia* synthetically, take one part freshly chopped rubber bands, one part dried gum from peach trees, two parts pickled pig's feet, add water, mix well, and stew slowly for twenty minutes. W. A. Murrill.

AMANITA POISONING

In the early forenoon of Saturday, September 11, 1926, James Marks, a day laborer, aged 55 years, collected, in a thin woodland near London, Ont., three or four quarts of mixed, white mushrooms. They were cleaned and stewed in milk with chopped parsley and onions. The parents with two children, John Marks, aged 12, and Annie, aged 7 years, had dinner about 11 o'clock and ate a portion of the mushroom stew.

In the mid-afternoon, a Polish acquaintance, Stan. Slivinski, aged 45, called at the Marks home. He learned of the mushroom delicacy they had had for dinner; regretted that he had not gone mushroom collecting with Marks and was pleased when he was given a bowl of the stew which he took away to the home of Joseph Shyzmanski. Between 3 and 4 o'clock these two men sat down to enjoy the treat. Shyzmanski sampled two or three spoonfuls, declared they were bitter and that he did not like them and stopped with that. Slivinski said "They are good—I like them," and finished his dish. The former assured me himself that he did not swallow more than a good teaspoonful.

By 5.00 P.M. Mrs. Marks began to feel pain in the region of the stomach and nausea, succeeded by dizziness and a feeling she described "as if she were drunk." Thereupon she dosed herself heavily with castor-oil. Shortly afterwards her husband came into the house feeling "queer." And then Slivinski called to thank them for the mushrooms and finding two of them ill assured them that it couldn't be the fault of the mushrooms seeing that he was feeling fine and tried to cheer them by saying they would all be singing "Alleluia" in the morning.

In the late evening the twelve-year-old boy alarmed the neighbors with the story that his father and mother were dying; by 9.00 o'clock the two children as well as the parents were very ill. Medical aid arrived. Cramps, particularly in the legs, vomiting, diarrhea, and other evidences indicated amanitine poisoning to the physicians and they did the best in the case that medical science knows. The family including a nursing infant were removed to the hospital.

After the lapse of a like number of hours Slivinski became similarly ill and was taken to the hospital. Shyzmanski's turn came

next; he remained in his comfortable home and was nursed by his family.

The hospital records show, of course, the progress of the poisoning in each case and the remedial measures and medicaments employed to meet the varying conditions as they developed. Taken altogether they exhibit variation and repetition of the following effects: cramping pains, more or less violent, often in the limbs; vomiting, sometimes of greenish liquids; diarrhea, greenish liquid stools, passing of blood; fierce thirst; local or general severe soreness of the muscles; very rapid, weak, thready pulsation; bluish or greenish jaundice; alternation of drowsiness and delirium; rigidity of the limbs; brief coma. In the tale of medication employed, when and as needed, were stomach-washing, colon-flushing, morphia, spiritus frumenti, atropin, digitalis, hyoscine-hydrobromide, adrenalin.

Annie Marks, the seven-year-old child, was the first to be relieved by death. In 22 hours from the eating of the mushrooms her eyes were becoming stary, her extremities rigid and her throat unable to swallow. Before the 24th hour had lapsed her consciousness ceased; adrenalin failed to whip up the heart to further action. She was dead.

The father, a man of rugged, muscular frame, was next to go. On Monday morning, in his delirium, he got out of bed and as late as 4.00 in the afternoon he was struggling to rise. At 4.20, in the 41st hour after the fatal meal, he had ceased to breathe.

Slivinski, an able-bodied and younger man than Marks, whose mushrooms were eaten 4 or 5 hours later, survived him by 12 hours, making 2 days and 14 hours from the time he supped the dish. He was delirious and talking wildly when his eyes began to glaze, his limbs stiffened, his face became gray, his pulse stopped.

Shyzmanski, who stated to me that he hardly more than well-tasted the stew, kept his bed at his home for five days. His acute attacks would seem from the accounts I obtained to have been quite severe but yet less violent and less frequent than those already referred to. On the 5th day, he had one or two of these attacks but at 4.00 o'clock in the afternoon his family thought he was past the crisis and were hopeful of his recovery. And yet, in

less than two hours, with his physician at his bedside fighting for his life, his heart failed.

John Marks, the boy, suffered experiences similar to those of the others. At 8.00 A.M. on the 4th day he stiffened out, and with head thrown backwards, and eyes stary, he mumbled deliriously through an attack that lasted about five minutes. Revived by stimulants, he vomited some greenish fluid and from that time began to improve without serious relapse. He left the hospital on the 25th day, still paralyzed in his legs. With the help of crutches he began to use his legs, gradually recovered their tone and now at the end of two and a half months is nearly well.

The infant that fed at the breast of the poisoned mother on the first half day showed no toxic effects.

The mother herself who thinks she ate as much of the stew as any of the others suffered terrible pains in all her muscles and passed considerable blood but she seemed to have escaped the intense severity of the onsets endured by those who died. She may have responded more favorably to the medication or the heavy dosing with castor-oil and the early vomiting may have had beneficial effects. She and her son left the hospital the same day. Now in the eleventh week she can still feel the effects of the poisoning in the muscles of her arms and calves.

The title of this report names the genus of the offending fungus; I may fairly go a step further and name the species. Part of the stew had been set aside in the Marks home to be served at a future meal. This or a portion of it was brought to me and by floating it out and gently washing it in large quantities of water the parts became more or less recognizable and, after dissolving the fatty globules out in alcohol and ether, suitable for microscopical examination. There was evidence from spores and tissues of at least five different kinds: infundibulate species of *Clitocybe*, short-celled Lactars or *Russulae*, and *Amanitae*. There were two unbroken caps with annulus and most of the stem of *Amanita verna*. There were several stems and portions of caps having appearance and microscopic tissues quite like those of the specimens last named. I judged that approximately 20 to 25 per cent of the collection may have been of *Amanita verna*.

Mr. Marks had evidently been a diligent collector of fleshy

fungi. I was shown a large quantity that he had dried for winter use including many *Boleti*. Of the latter only the tramal part of the caps had been saved. Mrs. Marks informed me that they had found these good eating when they were fresh but they always rejected the stems and the under part—meaning the pore layer. She vows that she will never again eat another mushroom no matter what kind it is or who recommends it. Certainly she came to her resolution at heavy cost. JOHN DEARNESS.

VIVIAN MAIER